

# Record your first hologram

This kit allows you to record your own holograms by yourself. For this, you can find in this kit:

- A pack of five 6x6cm holographic plates
- A bottle of Ultimate safe developer in concentrated form to be diluted at the time of use
- A bottle of Ultimate safe bleach ready for use
- A Photoflo syringe **to be diluted in one time in a 100ml bottle of demineralized water**, called "rinse bottle", which will serve as final rinse before drying

You must also have:

- A laser with its projection optics
- A LED allowing you to work in safelight
- A object to record (see the preparation in the notice)
- A processing tray, flat bottom and white color are preferred
- Clean running water
- Lint free paper towels
- Electric hair dryer



## Safelight:

- Green LED for red sensitive plates
- Red LED for blue and green sensitive plates

Your plate should only be taken out in safelight until the end of the revelation.



**Before recording your hologram, take out your plates from the refrigerator and let them adjust to room temperature, inside their bag, at least 30 minutes prior to exposure.**

## **1<sup>st</sup> step: Preparation of the holographic scene**

Turn on your laser at least 30 minutes before using it, for a Helium Neon laser, so that it can stabilize in temperature.

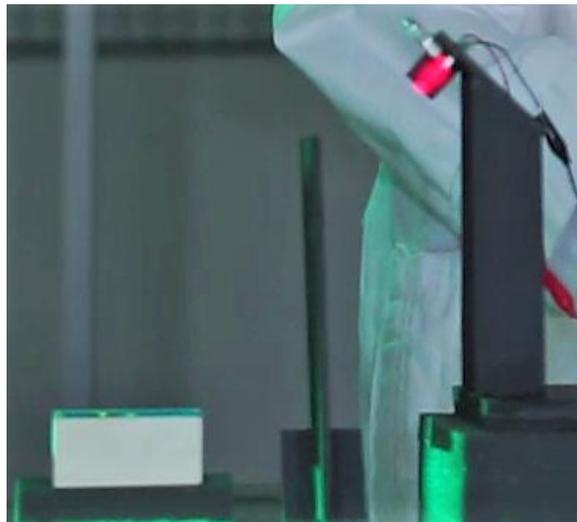
Put your object so that it can be illuminated uniformly by the laser.

**Under inactinic light and by hiding the laser beam with the shutter, take out the plate of its bag and put it over the object to record, gelatin side next to the object.**

How to know which side is the “gelatin side”? Blow onto the plate and watch it through safe light.

- If steam appears on the plate, you have blown onto the glass side.
- If nothing happens, you have blown onto the gelatin side. Remember which side it is and let the plate re-adjust to room temperature (about 30 minutes) so that the temperature of the gelatin gets uniform again. You can also take another plate and keep this one for the next exposure.

Let stabilize one minute.



## **2<sup>nd</sup> step: Preparation of the developer**

The developer comes concentrated. You will need to dilute with water only the quantity that you need. For its dilution, pour one dose of developer for about ten doses of water into the tray (it is not a critical precision). Your developer is now ready for use, and you can reuse it for about 6 hours.

**Measure the water temperature, it must be equal or greater than 20°C (68°F) to function properly. If the water is colder, heat the tray with water and developer inside for a few seconds in the microwave.**

If your room has a temperature higher than 25°C, you will shorten your development time to 4 minutes instead of 6 minutes.

### **3<sup>rd</sup> step: Exposure**

You can now proceed to the exposure. **Open your shutter the required time** (see calculation below).

The exposure time depends on the size of the holographic plates used and on the power of your laser.

Calculation of exposure time:

U08M plates have a sensitivity of 100μJ/cm<sup>2</sup>.

For a HeNe 1mW laser projecting a beam with a 8cm diameter, the exposure time is  
approximately 10 seconds.

For a more powerful laser or a different diameter, make a pro-rata calculation.

### **4<sup>th</sup> step: Revelation + Rinse**

Still **under inactinic light**, take your plate and put it, **gelatin side upwards**, into the tray with the diluted developer. **The development lasts 6 minutes**. During the development, **agitate slowly and continuously the tray**.

Then throw the developer into the sink (it is not toxic) or keep it for the next plate (in your kit you have enough developer for 5 plates). Then, rinse your plate under running water for 30 seconds in the tray. The temperature of the water doesn't matter.

You can now turn on the light.

After development, the plate will have a yellow/orange color.



*Example of plate after development.*

### **5<sup>th</sup> step: Bleach + Rinse**

Pour the bleach into the tray with the plate. **Agitate continuously and slowly until you get a good transparency** (about 3 minutes).

**Note:**

- **If bleaching is done in less than 2 minutes, this is an indicator of underexposure, you will increase the exposure time for the next shot**
- **If the bleaching is done in more than 4 minutes, this is an indicator of overexposure, you will decrease the exposure time for the next shot**

Now you can observe your hologram by transmission.



*Hologram observed by transmission via halogen spot, after bleach.  
When the hologram is successful, this image will be very strong.*

Then put the bleach back into its bottle, you can reuse it as long as it works.

Wash the plate under running water (the temperature doesn't matter) for 1 minute.

If you want to obtain a total transparency, put the plate back in the bleach for 30 seconds and then rinse again.

**Note:**

- **The gelatin must be transparent.**
- **If it is opaque, the plate has been overexposed, you will decrease the exposure time at the next shot.**

**6<sup>th</sup> step: Final rinse + Drying**

Pour into the tray the water of the "rinse bottle".

Soak the plate one minute in this solution.

Then remove your plate delicately of the tray and wipe it **gently** on the gelatin side with paper towel, in every directions, until the surface is dry.

Finish drying with a hair dryer.

**Your hologram is finished.**



## 7<sup>th</sup> step: Final result

If the hologram is bright and the plate is transparent, the exposure is perfect.

If the hologram is bright but the plate is opaque, there has been an over-exposition. Decrease the exposure time.

If the hologram is dim but the plate is transparent, there has been an under-exposition (or the object or the plate moved). Increase the exposure time.

Examples of h

